

# DROSERA (DROSERACEAE) IN THE SOUTHEASTERN UNITED STATES: AN INTERIM REPORT

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After cursory study, I concluded that E. L. Reed had been correct in describing the common Texas species of *Drosera* as new and distinct from the eastern *D. brevifolia* (1915). It accordingly appears as *D. annua* E. L. Reed in my *Spring Flora of the Dallas-Fort Worth Area, Texas* (1958). In the same month that the book appeared (April), a trip to Florida enabled me to see and collect the eastern species, which proved conspicuously different from the Texas plant. It was a distinct surprise when two years later Dr. Carroll E. Wood, Jr., in a commentary on Southeastern *Drosera*, dismissed *D. annua* as not worthy of recognition. Further study in both field and herbarium leaves me completely satisfied not only that *D. annua* is a distinct species from *D. brevifolia*, but that what has long passed as *D. brevifolia* is in fact an undescribed species and not what Pursh named at all. This provokes skeptical thoughts about Harvard's "massive project" for a generic flora of the Southeastern United States, of which Dr. Wood's paper is a part. Before making detailed comments, let me offer my synopsis of the Southeastern species of *Drosera*.

This account is based primarily on collections in the SMU Herbarium, and my own field observations in Texas, Louisiana, Alabama, and Florida. I had hoped to examine the material used by Miss Wynne, whose revision Dr. Wood mainly followed (the most notable difference being that she did not even mention *D. annua*). Because the New York Botanical Garden was closed for remodeling at the time, I borrowed instead the Southeastern material (except of *D. rotundifolia*) from the U.S. National Herbarium. After the study was essentially finished, it became possible to borrow from New York, but only a few specimens (kindly selected for me by Dr. Arthur Cronquist) were examined, and as it turned out, none had been annotated by Miss Wynne. I am grateful to the various curators for the use of their material.

## KEY TO SOUTHEASTERN DROSERA

1a. Leaf blades no wider than the petioles

2a. Petals 7-10 mm. long; plant 12-40 cm. tall while in flower; leaves with gland-tipped hairs only, or (in a few specimens from northern New Jersey and New York) also minutely and inconspicuously gland-dotted; blooming July-August; southern Maryland (introduced), New Jersey to Massachusetts. . . . . 1. *D. filiformis*

- 2b. Petals 10-20 mm. long; plant 25-60 cm. tall while flower; leaves with gland-tipped hairs and at least dorsally with numerous sessile glands; blooming April-May; Southeastern Coastal Plain in Georgia, Florida, and Mississippi (reportedly extending to South Carolina and Louisiana).....2. *D. Tracyi*
- 1b. Leaf blades much wider than the petioles
- 3a. Scape glabrous or with inconspicuous, sessile glands; stipules prominent
- 4a. Petioles glabrous or with inconspicuous, sessile glands. 3. *D. intermedia*
- 4b. Petioles with few to many, moderately long hairs lacking gland-tips
- 5a. Leaf blades suborbicular to reniform-orbicular, the largest broader than long; calyx cylindrical-ovoid just before and after flowering, the sepals thin, narrowly oblong-oblancheolate or oblong, mostly united less than  $\frac{1}{4}$ .....4. *D. rotundifolia*
- 5b. Leaf blades narrowly obovate to suborbicular, the largest as broad as long or narrower, calyx cup-shaped for funnellform-campanulate just before and after flowering, the sepals firm, oblong-elliptic to ovate-elliptic, united about  $\frac{1}{2}$  5. *D. capillaris*
- 3b. Scape with gland-tipped hairs except toward base; stipules absent or vestigial
- 6a. Petals 1-5, light to deep lavender-pink, 2.5-8.0 mm. long; sepals 2.5-4.0 mm. long; frequent to rather common west of Mississippi River, rare in S. Alabama and E. Tennessee.....6. *D. annua*
- 6b. Petals 5, pure white, 5-10 mm. long; sepals 3.0-4.5 mm. long; Gulf and Southeastern Coastal Plain, southern Louisiana to Florida, north to Virginia.....7. *D. leucantha*

1. *D. FILIFORMIS* Rafinesque. The Maryland record for this species is as follows. Prince Georges Co.: Suitland Bog, *E. H. Walker* 4162, 5 Aug. 1947 (US). "Flowers pinkish or purple, closed. In seepage bog. Introduced by A. V. Smith. Growing successfully and spreading. New plants sprout from fallen leaves." Wood reports it from North Carolina and doubtfully from South Carolina and Georgia, but I have seen no material from so far south.

2. *D. TRACYI* Macfarlane in L. H. Bailey, Standard Cyclop. Hort. 2: 1077. 1914. *D. filiformis* var. *Tracyi* Diels, Pflanzenreich IV. 112: 92. 1906. For nomenclatural quibblers, it should be pointed out that *Drosera Tracyi* Macfarlane is a new name, not a new combination based on Diel's earlier publication of it as variety (this in turn based on the then only manuscript binomial). Wynne (1944) stated that this differed "only in its pale green pubescence, larger size, and more robust habit" from *D. filiformis*, and in 1952 apparently did not consider it worth even varietal status. Wood speaks of it as "a very distinct taxon," which it certainly is. The marked difference in flowering period cannot be ex-

plained as due merely to difference in latitude, and this added to the other features given in the key seems to me to warrant treating it as a species. Wynne reports it (1952) from "S.C. to Fla. and La." (incorrectly assigning it the same flowering period as *D. filiformis*). I have seen specimens only from the following states and counties. FLORIDA. Bay, Gulf, Wakulla, Walton. GEORGIA. Brooks, Colquitt, Thomas. MISSISSIPPI. George, Harrison, Jackson. Petals pink to rose-purple.

3. *D. INTERMEDIA* Hayne. Distinctive in its tendency to develop definite, leafy stems, and in the long petioles and narrow leaf blades. Said by both Wynne and Wood to extend west to Texas in the Gulf States, but I have seen no specimens from west of Mississippi. ALABAMA. Mobile. FLORIDA. Calhoun, Escambia, Franklin, Highlands, Lake, Sumter. GEORGIA. Charlton, Harrison. MISSISSIPPI. Hancock, Harrison, Jackson. NORTH CAROLINA. Brunswick, Gates, Henderson, New Hanover, Onslow. SOUTH CAROLINA. Aiken, Chesterfield, Kershaw, Lexington, VIRGINIA. Princess Anne. Flowering July-August. Petals white (color noted on only one specimen out of 41 examined).

4. *D. ROTUNDIFOLIA* L. No material of this species was borrowed. The following two specimens at SMU are the only ones seen from the Southeast. NORTH CAROLINA. Henderson Co.: in pasture peat bog at East Flat Rock, *Don Correll* 3321, 27 July 1935 (distributed as "*Drosera capillaris* Poir.?"). Macon Co.: wet sphagnum pockets on ledges of cliff; Horse Cove, near Highlands, *W. B. Schofield* 9071, 7 July 1958. Said by Wynne and Wood to extend south to Georgia and South Carolina (latter queried by Wood). Color not noted on any specimens at hand (32 sheets, mostly Northeastern); described by Fernald as white, rarely pink.

5. *D. CAPILLARIS* Poirlet, *Encycl. Meth. Bot.* 6: 299. 1804. *D. brevifolia* Pursh, *Fl. Am. Sept.* 1: 211. 1813 ("1814"). Not *D. brevifolia* of authors from Chapman (1860) on, which is mostly *D. leucantha*, below. Pursh's entire description follows:

3. *D. pusilla*; scapis radicatis simplicibus, foliis brevibus *brevifolia* cuneatis vix petiolatis, petalis ovalibus.

In sandy swamps of Georgia, *Ensl. June. v.s.*  
in *Herb. Ensl.* The smallest of all the species known; flowers rose-coloured.

Without seeing the type (location unknown; possibly not in existence; Diels cites another Ensl. specimen bearing no locality beyond Southern U.S.) there may be a little doubt as to what Pursh had, since the description says nothing about pubescence on the scape (though failure to mention it suggests there was none) or presence of stipules. Pursh listed only four species, the other three being *D. rotundifolia*, *D. longifolia*, and *D. filiformis*; he makes no mention of *D. capillaris*. But his statements "smallest of all the species known; flowers rose-coloured" apply exactly to *D. capillaris* among the Southeastern species. The words cannot possibly refer to the plant with large, white flowers which

Chapman and later authors mistakenly have called *D. brevifolia*. The phrase "foliis brevibus cuneatis vix petiolatis" of course excludes *D. filiformis*, and makes both the very long-petioled *D. intermedia* and the round-leaved *D. rotundifolia* very unlikely candidates. Enslin collected in Lower Georgia, which I take to mean the Coastal Plain. The only species in this area to which Pursh's description reasonably applies is *D. capillaris*. The amplified descriptions of *D. brevifolia* given by Nuttall and by Torrey & Gray indicate that they applied the name chiefly to *D. capillaris* (which name they also do not mention), but included forms of other species under it. Occasional plants with rather long, narrow leaves superficially resemble *D. intermedia*. I have seen specimens from the following states and counties (parishes). ALABAMA. Mobile. FLORIDA. Duval, Escambia, Glades, Highlands, Hillsborough, Indian River, Lake, Lee, Liberty, Manatee, Pinellas, Polk, Seminole. GEORGIA. Baker, Sumter. LOUISIANA. Beauregard, Rapides, St. Tammany. MISSISSIPPI. Jackson; also "Avondale" (county not determined). SOUTH CAROLINA. Berkeley, Charleston, Georgetown, Hampton, Kershaw, Sumter. TEXAS. Jasper, Robertson, Van Zandt, Waller. VIRGINIA. Nansemond, Prince George, Sussex. Flowering late February-June, and less freely July-September. Petals pale lavender-pink or almost white.

My number 23,514 from Beauregard Parish, Louisiana, distributed as *D. annua*, is *D. capillaris*.

6. *D. ANNUA* E. L. Reed, *Torreyia* 15: 246—247. 1915. This is very closely related to *D. maritima* St. Hil. of southern Brazil and Uruguay, of which I have seen only five specimens, one of them sterile. In *D. maritima* the naked portion of the scape is 1.5—2.5 (rarely —4) times as long as the leaves, the sepals are obtuse or subacute, and the lowest pedicel is 1.0—3.5 mm. long. In *D. annua* the naked portion of the scape is 2.5—7.0 times as long as the leaves, the sepals are acute or subacute, and the lowest pedicel is 1—5 mm. long. These differences may appear slight. But considering how closely herbarium specimens of *D. annua* and *D. leucantha* may resemble each other when well-opened flowers and color data are lacking, while live plants could not possibly be confused, I prefer to treat the North and South American plants as two species. Some rather robust specimens collected by Dr. B. C. Tharp on Padre Island, Texas, greatly resemble the South American species. At the other extreme, collections made by Dr. H. K. Svenson in Coffee and Franklin Counties, Tennessee, are exceptionally small. In addition to the records given below, Barclay (1938) reports *D. annua* from Latimer, Le Flore, and McCurtain counties in eastern Oklahoma.

ALABAMA. Mobile. ARKANSAS. Ashley, Bradley, Calhoun, Drew, Hot Springs, Jefferson, Miller, Pope. LOUISIANA. Allen, Calcasieu, Vernon, Winn. TENNESSEE. Coffee, Franklin. TEXAS. Anderson, Bastrop, Brazos, Cherokee, Galveston, Hardin, Harris, Jefferson, San

Patricio, Smith; also Padre Island (county not determined). Flowering late February—early June.

7. *D. leucantha* Shinnery, sp. nov. Annu (interdum perennans?) parva grandiflora exstipulata foliis obovatis petiolatis scapo glanduloso-pubescente petalis candidis 5—10 mm. longis. HOLOTYPE: St. Simon's Island, near Brunswick, Glynn Co., Georgia, Arthur Conquist 5255, 11 April 1947 (SMU; isotypes NY, US). "Among cabbage palmetto is moist pale gray sand that is blackened with organic matter. Delicate perennial (*sic!*). Fls. white, just beginning to open about 8 A.M. Closing again shortly after noon." This is *D. brevifolia* in the sense of Chapman, Small, and Fernald, and in part of Wynne and Wood; not of Pursh, which is *D. capillaris*, as explained under no. 5. The following additional specimens have been seen. FLORIDA. Alachua Co.: Gainesville, Gerrit S. Miller Jr. 438 (US). Brevard Co.: Titusville, R. E. Earle (US). Collier Co.: East Henson Marsh, L. J. Brass 15970 (US). Duval Co.: near Jacksonville, A. H. Curtiss 4554 (US). Escambia Co.: 5.4 miles south of McDavid, Shinnery 29,702 (SMU). Jackson Co.: just east of Grandridge, Shinnery 26,990 (SMU). Lake Co.: vicinity of Eustis, G. V. Nash 10 (US). (Petals noted as pink, but I believe this an error; Nash also collected 3 numbers of the pink-flowered *D. capillaris* at the same locality.) Manatee Co.: Manatee, J. H. Simpson (US). St. Johns Co.: without locality, Miss Reynolds (*Herb. J. D. Smith*) (US). (Mixed collection: 6 plants of *D. leucantha*, 1 of *D. capillaris*.) Washington Co.: Caryville, Shinnery 27,018 (SMU). GEORGIA. Chatham Co.: 0.5 mile south of Savannah, Gilbert G. Rossignol (US). LOUISIANA. Calcasieu Parish: Dequincy, F. W. Pennell 10236 (NY). (Mixed collection, partly *D. annua*.) St. Tammany Parish: vicinity of Covington, Bro. Aneet 29 (US). Tangipahoa Parish: Hammond, Lewena Gallup 11 (US). MISSISSIPPI. Harrison Co.: Biloxi, S. M. Tracy 5116 (US). Jackson Co.: Ocean Springs, Josephine Skehan (*Seymour & Earle Mexican Gulf Coast Flora no. 34*) (SMU). NORTH CAROLINA. Pender Co.: Rowe's Bridge, Burgaw, R. K. Godfrey 3463 (US). SOUTH CAROLINA. Darlington Co.: W. Hartsville, J. B. S. Norton (US). Dorchester Co.: vicinity of Charleston, K.W.H. 125a (SMU). VIRGINIA. Elizabeth City Co.: Hampton, D. Harrison (US); Gerrit S. Miller Jr. (US). Nansemond Co.: south of South Quay, Fernald & Long 12089 (US). Sussex Co.: about 4 miles northwest of Homeville, Fernald & Long 9940 (US). Flowering February—June.

This very striking species was first described by Stephen Elliott, who mistakenly called it *D. rotundifolia*. He stated that it is annual, and has a white corolla. Torrey and Gray cite Elliott, and like him refer the plant to *D. rotundifolia*. Chapman calls it *D. brevifolia*, and describes it as annual without rhizomes. Small's *Flora* follows Chapman's nomenclature, but says that it is "biennial, or perennial by short rootstocks." In his *Manual*, there is no mention of rootstocks or duration. Fernald, also following Chapman's nomenclature, describes the whole

genus as consisting of "low perennials or biennials" but says nothing further about the life-span of this species; he states "petals white, 5—8 mm. long" and "the large flower closing at noon." Wynne makes no mention of duration. Her description of the petals as "white to pink, 4—5 mm. long" is obviously based on a mixture, and does not apply to most of the plants belonging to *D. leucantha*. Wood considers the species basically perennial, but "apparently behaves as an annual in many areas and has been so described (*D. annua* Reed)." Like Wynne he of course was referring to a mixture, but nothing he included under the name is typically perennial.

#### DROSERA AND THE SOUTHEASTERN GENERIC FLORA

A flora is an account of the species of plants of a given area. A generic flora is a contradiction in terms. It is not a flora, but a device for evading the trying job of writing one. In the case of the Droseraceae, in which Small both failed to splinter the genera and overlooked the fact that Rafinesque had done so, a discussion of genera seems particularly pointless. When in the course of it we are given a rehash of an unsatisfactory previous account of the species with the addition of fresh error, one may well ask just what good it all is.

The completeness of information in a flora depends on the amount of direct study that has been done on the plants and in the area concerned. When such study has been done by many persons over periods of hundreds of years, it is possible to produce a work like Clapham, Tutin & Warburg's recent *Flora of the British Isles*, including details on habitat preferences, pollination, chromosome number, and so on. The phrase "biologically oriented flora" is to me altogether meaningless. When we consider *Drosera* in particular, we find that out of 33 references cited by Wood, not one relates to the Southeast as delimited for the proposed generic flora, and a previous bibliography of 3¼ pages to which reference is made likewise contains not a single title reporting work done on the plants in that area. To offer all this as material for a "biologically oriented" flora of the Southeast is as preposterous as it is pretentious.

What is needed first and foremost is direct study of the Southeastern plants themselves. The best of the insufficient authentic information we have is to be found in the floras of Elliott, Chapman, and Small, and in the publications of Roland M. Harper — men who lived in the South or did extensive field work there. But this is not enough for a good, up-to-date flora of the area. Much activity is now under way there, but it is hampered by the very lack of a manual. The greatest contribution that could be made toward a definitive flora of the Southeast is a concise interim guide as complete as present knowledge permits. It is far too early to think of an encyclopedic treatise.

An erudite compilation from publications largely only tangential or irrelevant may be of interest to some, but it is not the material out of which a Southeastern Flora of any kind can be made.

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